REMARKS

Claims 10 and 17 are amended herein. Claim 19 is cancelled, and its subject matter incorporated into claim 17. Claims 21 and 22 are added. No new matter is added.

The Examiner rejected claims 17 and 19 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,435,716 to Polkus *et al.* ("Polkus"). Polkus discloses a system for measuring the SID in a radiographic imaging system. The x-ray source is positioned at various points, whose location is determined by sensors. At two different source positions, x-ray photons are directed to a detector. col. 5, lines 53-55. The size of the incident beam for the two different source positions is used to calculate the separation gain constant and SID values.

The present invention utilizes a radiated signal other than the x-ray beam to measure SID values. In an exemplary embodiment, an optical laser beam is directed from the source to the image receptor, and its travel time measured to calculate the SID. Claim 17 has been amended herein to stipulate that the radiated signal source is one of a laser beam source, an ultrasonic signal source, a magnetic field source, or an RF electromagnetic signal source.[1] Claim 17 thus precludes the use of an x-ray beam to determine the SID, as disclosed by Polkus.

The Examiner rejected claims 10, 11 and 15-20 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,421,328 to Kleinman ("Kleinman"). Kleinman discloses a method of determining exposure parameters for an x-ray imaging system, such as voltage (KV), current (MA), and exposure time for a variety of body sizes and types. The source to image plane distance is fixed and known. col. 2, lines 30-31; col. 3, lines 35-37. "What is not initially known, because it depends on the shape, size and position of the body part to be imaged, is the thickness of tissue through which x-rays must pass in order to reach [the] image receptor." col. 3, lines 39-43. "The relevant thickness [of the tissue to be imaged] is measured herein with the help of a ranging transducer structure." col. 3, lines 45-47. Not only does Kleinman not

[1] RF is understood in the electronic arts to mean "radio frequency," and is loosely defined as electromagnetic signals with a wavelength above 10 cm. X-rays have wavelengths from 10 pm – 10 nm. See http://imagine.gsfc.nasa.gov/docs/science/know_l1/spectrum_chart.html

measure the source to image plane distance, Kleinman is incapable of making such measurement without extensive modification to its thickness measuring circuits.

These circuits are described at col. 4, lines 3-29. The duration of signal travel time (i.e., counts of pulse generator 24) attributable to the 2-way travel time between the transducer 20 and the table surface 14 – a fixed, known value – is loaded into a first portion of counter circuit 32. The pulse count attributable to the ranging signal is subtracted from this value to calculate the tissue thickness. Kleinman's ranging circuit is incapable of **directly** measuring the distance from the ranging transducer to the table surface – a not surprising result, as such a measurement is not necessary or desired.

The Kleinman system is optimized to measure the thickness of tissue on an imaging surface, not the distance to the imaging surface. See col. 4, lines 55-64. In particular,

> It has been discovered that [obtaining superior ranging results] is particularly true when there are sharp variations in the thickness of the body part which is within the confines of x-ray beam 10b (which typically is cone-shaped, or pyramid-shaped), for example, when the body part is the foot, or an arm, or a leg."

Consequently, particularly poor ranging results may be expected when there are not only no variations in thickness of a body part, but no thickness at all to be measured. Kleinman thus teaches away from the use of its system to measure that for which there is utterly no motivation or suggestion to measure – the distance from an x-ray image source to the imaging forming plane.

The Examiner has failed to provide any such motivation for the extensive modifications required of Kleinman to transmogrify it to the function of the present invention. The Examiner stated, "It would have been obvious . . . because it would allow one to precisely position, with a large degree of variations in the configuration, the radiation source beam and the image receptor." Yet Kleinman discloses no variation in the configuration of the x-ray source and the image plane. Indeed, Kleinman states precisely the opposite, "For a given examination, the distance between focal spot 10a and image plane 16 is fixed and known . . . the distance is

typically either 40 inches or 72 inches." The only thing that would lead one to modify Kleinman to directly measure the source to image distance is Applicant's claims 10 and 17. This is impermissible hindsight. "Obviousness may not be established using hindsight or in view of the teachings of the inventor." *Para Ordnance Manufacturing, Inc. v. SGS Importers International, Inc.*, 73 F.3d 1085 (Fed. Cir. 1995). The Examiner has thus failed to establish a *prima facie* case of obviousness, and the claim rejections cannot stand.

Notwithstanding the above, in an effort to expeditiously move the present case to allowance, Applicant has modified claims 10 and 17 herein to explicitly state that the measuring device directly determines the distance from a radiated signal source to a detector. By this amendment, Applicant means that the calculation does not involve altering the measured travel time by a known and fixed distance, as is performed by the counter circuits 32 and preset value 34 of Kleinman. "When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning . . ." In re Zletz, 893 F.2d 319 (Fed. Cir. 1989). Claims 10 and 17 thus define patentably over Kleinman, as do all claims depending therefrom.

The Examiner rejected claims 10-20 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 4,896,343 to Saunders ("Saunders"). Saunders discloses a scanning laser ranging system that measures the distances from a source to a variety of points on the surface of a body undergoing radiological examination, to produce a topographical map of the surface area of the body. This allows precise tuning of the laser to irradiate a small area, such as for the treatment of a tumor. Saunders does not concern the determination of the distance from an x-ray source to an image plane at all. Nor is this distance required for calculation of the body thickness, as in Kleinman. Further, the calculation of the body surface topographic map of Saunders results from a complex geometric arrangement of multiply deflected laser beams driven by rotating mirrors, and complex calculations to resolve the geometry into a 3-dimensional map. The complexity of Saunders alone teaches away from its use to measure a single directed distance from a point source to a flat plane – a measurement that Saunders

discloses no use for in the first place. Here again the Examiner has not articulated a motivation or suggestion to modify Saunders to as to render the present invention obvious. Saunders discloses **no** variation of configuration between the radiation source beam and the image receptor, the Examiner's proffered motivation. The Examiner has failed to establish a prima facie case of obviousness, and hence claims 10 and 17, as well as all claims depending therefrom, are patentably nonobvious over Saunders.

New claims 21 and 22 depend from claim 10, and recite two positions of the detector of the present invention. Claim 21 recites the detector in the same plane as the image receptor. In this case, the source to receptor distance measured is the direct distance, in a straight line, from the radiated signal source to the detector. Neither Kleinman nor Saunders render this claim obvious, as both references involve at least one reflection of the radiated signal. Claim 22 recites that the radiated signal is reflected by the image receptor back to a detector located proximate the radiated signal source. Both Kleinman and Saunders teach away from claim 22, as both references direct a radiated signal to a body interposed between the signal source and the image receptor, and reflect the radiated signal off of the body.

All claims being patentable over the cited art, prompt allowance of the same is hereby respectfully requested.

Respectfully submitted,

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